DESIGN AND SYNTHESIS OF MUTANT VARIANTS OF THE ALLERGEN COMPONENT ART V 3 FROM *ARTEMISIA VULGARIS*

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During the pollination season, airborne pollen and related allergies are significant public health issues. The World Health Organization has predicted that by the year 2050, one out of two people will suffer from allergy [1]. Allergen sources may vary: pollen, dust mites, food and pharmaceuticals, but the most common allergens are proteins. An allergen is described as any molecule that causes allergic responses and production of allergen-specific imunoglobulin E (IgE). Strong immune response caused by an allergen can contribute to the development of diseases such as asthma, allergic rhinitis and eczema [2]. Around the globe, allergies are a common health issue, although exact numbers are not accessible, estimates range from 20 % to 40 % [3]. Anti-inflammatory drugs and allergen avoidance are the most common recommendations to suppress allergic symptoms, but have no long-term effect and do not modulate the immune responses to allergens. In the future, development and application of hypoallergens in the personalized allergen immunotherapy could help to prevent adverse immune reactions. Molecules known as hypoallergens are less likely to induce allergen-specific IgE response but has the ability to elicit the T cell response, without causing allergic symptoms in the patient. Hypoallergens may eventually lead to more specialized,
"tailor-made
" allergen-specific immunotherapy [2].

In the present study, mutants of the *Artemisia vulgaris* allergen component Art v 3 were generated and analyzed. Amino acids that may be involved in IgE-binding epitope formation were identified based on the literature and bioinformatic analysis. Eleven different variants of Art v 3 protein mutants were selected for the research. Three of them were generated and experiments of their synthesis in E. coli were performed during this work. The results of these experiments provide an important findings towards elaboration of immunotherapeutic tools for allergen specific immunotherapy.

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